

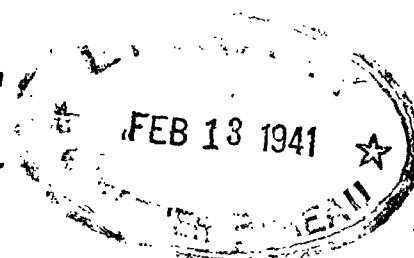
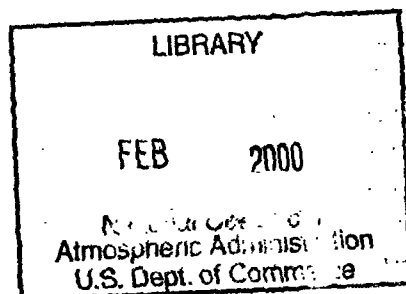
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GOVERNMENT OF INDIA
METEOROLOGICAL DEPARTMENT

INDIA WEATHER REVIEW, 1939
ANNUAL SUMMARY

PART B

SNOWFALL



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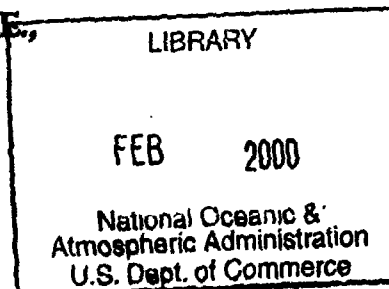
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C. W. B. NORMAND, M.A., D.Sc., C.I.E.,

Director General of Observatories



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INDIA WEATHER REVIEW, 1939.

ANNUAL SUMMARY.

PART B.

SNOWFALL.

This part contains a summary of the reports of snowfall in the mountain regions to the north and northwest of India. These reports are collected by local officers from the local residents, headmen of villages, or from travellers who have passed through the region, and are then transmitted to this office.

The amount of snowfall is usually measured by finding the depth of undisturbed snow lying on the ground and such measurements are given in feet and inches. At places provided with raingauges the snow collected in the gauge is melted and measured as rain; this is indicated in the text and the amounts are given in inches and cents.

Cold Weather Period, January and February.

I.—AFGHANISTAN.

Kabul.—Snow fell on ten days in January and on thirteen days in February in the Kabul valley, the aggregate depths, in the two months, being respectively a little over 1 ft. and nearly 5 ft. The falls were below normal in January, but at the end of the month all the ranges round the Kabul valley were covered with snow, and there were about 5 inches of snow on the ground. Falls were exceptionally heavy in February and roads and passes in the north were closed to traffic. Accumulations at the end of February were about 3½ ft. and 1½ ft. deep on the Paghman hills and Kabul valley respectively.

II.—BALUCHISTAN.

Quetta.—Light snowfall occurred on two days in January and one day in February. Accumulations at the end of the period were about 4 inches on peaks above 10,000 ft. in height.

III.—NORTH-WEST FRONTIER PROVINCE.

(a) *Hazara.*—Snowfall is reported to have occurred on several days in each of the months; the falls were exceptionally heavy in February. Approximate depths of falls and accumulations at the end of each month are given in the following table. Accumulations were slightly below normal in January and above it in February.

| Locality. | January. | | February. | |
|-----------------|----------|----------------|-----------|----------------|
| | Falls. | Accumulations. | Falls. | Accumulations. |
| | Ft. | Ft. | Ft. | Ft. |
| Thandiani . . . | 6½ | 5 | 3½ | 2 |
| Birangali . . . | 2½ | 1½ | 3 | ½ |
| Phalkot . . . | 9½ | 6 | 14½ | 5 |
| Dungagali . . . | .. | .. | 17½ | 6 |
| Miranjani . . . | .. | .. | 21½ | 7 |
| Mushpuri . . . | .. | .. | 21½ | 7 |
| Kalabagh . . . | .. | .. | 15½ | 5½ |
| Malkandi . . . | ½ | .. | ½ | ½ |
| Sundigali . . . | 7 | 2½ | 10½ | 4½ |
| Jacha . . . | 6½ | 2½ | 9 | 4½ |
| Narang . . . | 6½ | 5½ | 23½ | 14 |
| Paludran . . . | 4½ | 4½ | 18½ | 10 |
| Kagan . . . | 4 | 3 | 13½ | 8 |
| Jared . . . | 1 | ½ | 3½ | 1½ |

(b) *Dir, Swat and Chitral. Drosh.*—Snow is reported to have fallen on several occasions on the surrounding hills,

and on four days in January and five days in February at Drosh. The falls were below normal in January and much above normal in February. At the end of the period accumulations were observed on the surrounding hills above 7,000 ft. and a fair amount was also found at the station on account of the snowfall on the last two days of February.

Malakand.—Snowstorms occurred on four occasions in January and five times in February on the several ranges, the snowline descending down to 5,000 ft. above mean sea level in January and to 4,000 ft. in February. The depth of the falls, varying from $1\frac{1}{2}$ ft. to 4 ft. in January and $\frac{1}{2}$ ft. to $2\frac{1}{2}$ ft. in February, was below normal in the first month and normal in the second. The estimated accumulations at the end of each of the months are as follows:—

| Locality. | January. | February. |
|---------------------|----------------|-----------|
| | Ft. | Ft. |
| Lowarai | 12 | 12 |
| Bashkar | 16 | 14 |
| Mankiyal | 17 | 16 |
| Hindu Raj | $4\frac{1}{2}$ | 10 |
| Ilam | $4\frac{1}{2}$ | 6 |
| Dwa Sarai | $4\frac{1}{2}$ | 6 |

(c) *Khyber Agency.*—Snow fell once in January and twice in February. The heaviest fall of snow was 3" to 5" on the plains and 6" to 9" on the surrounding hills of Landikotal.

(d) *Kohat.*—Snow fell at Fort Lockhart to a depth of $6\frac{1}{2}$ inches in January and to a depth of $3\frac{1}{2}$ ft. in February.

(e) *North Waziristan.*—Unusual snowfalls are reported to have occurred during the period in the district.

(f) *Dera Ismail Khan.*—There was no snowfall in January. In February snow fell four times on the Sulaiman range and the snowline descended down to 6,000 ft. above mean sea level on the Takhat-i-Sulaiman and other higher peaks.

IV.—KASHMIR.

(a) *Skardu.*—The station and the surrounding mountains had snowfall on seven days each in January and February. The snowline descended to a height of about 7,500 ft. above mean sea level. At the end of the period all the surrounding mountains were covered with snow. Accumulations on higher passes were estimated to be 7 ft. at the end of January and 12 ft. at the end of February; they were above normal.

(b) *Dras.*—Throughout the district of Dras snowfall occurred on ten days in January and on sixteen days in February. The February falls extended to the hills of Mushkoo, Zillolin, Lamchan and Goshan and to the Zojilla pass. The falls of the period were normal. Accumulations at the ends of January and February were $4\frac{1}{2}$ ft. and 8 ft. respectively at Dras, 8 ft. and 15 ft. respectively at the Zojilla pass, and 9 ft. and 12 ft. respectively on high mountains and peaks. The accumulations were normal in January and above normal in February.

(c) *Srinagar.*—Several light to moderate falls of snow were recorded both in January and February, the falls being normal in January and above it in February. Accumulations on the mountains, though normal at the end of January, were of considerable depth at the end of the season.

(d) *Kargil.*—Snowfall occurred on nine days in January and on twelve days in February. The falls of the season were less than usual. Accumulations measured about 6 to 8 ft. at the end of January and 10 to 15 ft. at the end of February on high peaks.

(e) *Sonamarg.*—Snow was reported to have fallen on five occasions in January and seven times in February. They were normal in January and largely in excess in February. Accumulations on ground were 8 ft. at the end of January and 15 ft. at the end of February; on the Zojilla and Nichaney passes they were about 10 ft. and 17 ft. respectively at the end of the two months; they were above normal.

(f) *Leh.*—Occasional falls occurred in January. In February three or four light falls were recorded locally while on high passes heavier falls were observed. The snowline descended to 11,000 ft. Falls were below the average in January and above it in February. Accumulations on higher passes were estimated as about 2 to 3 ft. at the end of January and about 4 ft. at the end of February; they were above normal.

(g) *Muzaffarabad.*—Falls occurred in both the months. The total snowfall of the period was above the average. Accumulations at the end of February were normal.

V.—THE PUNJAB.

(a) *Rawalpindi.*—Snow fell on three days in January and on six days in February aggregating to depths of $2\frac{1}{2}$ ft. and $2\frac{1}{2}$ ft. respectively in the two months. Falls were confined to the highest peaks of Narar in the Kahuta Tahsil and the neighbouring peaks of Murree, Patriata, lower and upper Topas and Kuldana.

(b) *Chamba. Tissa range.*—Ten snowstorms occurred in each month, out of which one in January and two in February descended down the whole valley, the rest being confined to higher elevations. The average depth of snow recorded was 5 ft. and 4 ft. in the two months, and the falls were reported to be below normal.

Bhandal range.—Snowstorms occurred on three occasions in January and on four occasions in February. Falls were much below normal.

Bharmaner range.—Snow fell on eight days in January and on ten days in February; the depths of snow totalling to $7\frac{1}{2}$ ft. and $5\frac{1}{2}$ ft. respectively in the two months. Accumulations of the period were below the average.

Pangi range.—Snowfalls were reported on twelve days in January and on seventeen days in February. The total depths measured about $5\frac{1}{2}$ ft. and $10\frac{1}{2}$ ft. respectively in the two months. Falls of the period were much below normal. At Kilar, height 8,400 ft. accumulations were estimated to be about $8\frac{1}{2}$ ft. at the end of January and 9 ft. at the end of February; other passes and peaks were inaccessible and the relevant information could not be ascertained.

(c) *Kulu (Kangra District).*—Snowfalls, averaging to a depth of 2 ft. and 7 ft. in the months of January and February respectively, occurred on the high ranges of the district and they were below normal. The following table gives the depth of accumulations on important passes and peaks :—

| Locality. | January. | February. |
|----------------------|----------|-----------|
| | Ft. | Ft. |
| Awaru pass | 2 | 12 |
| Sawai | 2 | 18 |
| Sangaru | 2½ | 16 |
| Hampta | 4 | 20 |
| Rohatang | 3 | 17 |
| Bhabu | 2 | 7 |
| Bishlep | 2 | 13 |
| Jalori | 1½ | 11 |

The accumulations were below normal at the end of January and not far from normal in February. In the Nagar district snowfall was experienced above a height of 5,000 ft. in January and 4,000 ft. in February.

(d) *Kilba Hills (Simla District).*—Snow fell twice in January and on several occasions in February. One fall in January and four falls in the last week of February were quite heavy and on these occasions the snowline descended to 5,500 ft. above mean sea level. Falls during the period were considerably below normal. All the well-known passes and peaks were closed to traffic during the two months and the accumulations at the end of each month average about 12 ft. and 20 ft. respectively. They were above normal.

VI.—UNITED PROVINCES.

(a) *Almora.*—The following table gives the falls and accumulations of snow for the two months :—

| Locality. | January. | February. |
|------------------------|----------|-----------|
| | Ft. | Ft. |
| <i>Falls.</i> | | |
| Malla Danpur | ½ | 15 |
| Malla Darma | ½ | 23½ |
| Malla Johar | 2½ | 7 |
| Chaudans | 3½ | 4½ |
| Byans | 2 | 6 |
| <i>Accumulations.</i> | | |
| Bankatia | 30 | 50 |
| Nandakhet | 35 | 45 |
| Pindari | 55 | .. |
| Masurleg | 14 | 15 |
| Lampia | 18 | .. |
| Lipu | 12 | .. |
| Nanda Kot | .. | 50 |
| Nuwe | .. | 28 |

In both January and February the falls were below the average. Accumulations were above the average.

(b) *Garhwal.*—There were four snowfalls in January and thirteen in February in the district, the snowline descending to 6,000 ft. above mean sea level during the period. The depth of snow varied from ½ inch to 1 ft. in January and ½ ft. to 5 ft. in February. The accumulations on well-known higher passes of the district were about 4 to 7 ft. at the end of the period. Both the falls and accumulations were below the average.

VII.—ASSAM.

(a) *Kamrup.*—There was normal snowfall during the period and all passes to Bhutan were open.

(b) *Baliapara Frontier Tract.*—No information is available.

(c) *Sadiya Frontier Tract.*—In February heavy snowfall is reported to have occurred on the peaks of Obperi, Nyorong and Liyor.

Hot Weather Period, March to May.

I.—AFGHANISTAN.

Kabul.—Snow or sleet fell on nine days in March, the falls being above the average; the accumulations at the end of the month on the Paghman and Hindukush ranges were much above normal. The accumulations were much more than usual even at the end of May.

II.—BALUCHISTAN.

Quetta.—The last snowfall of the season occurred on the 10th March. By the first of May all accumulations on the surrounding peaks had melted away.

III.—NORTH-WEST FRONTIER PROVINCE.

(a) *Hazara.*—Snow fell on eighteen days in March. The following table gives the total amounts of snowfall and accu-

mulations at the end of March, both of which were above normal :—

| Locality. | Falls. | Accumulations. |
|---------------------|--------|----------------|
| | Ft. | Ft. |
| <i>Outer hills.</i> | | |
| Phalkot | 5½ | 6 |
| Thandiani | 3 | 6 |
| Kalabagh | 11 | 6½ |
| Dungagali | 11 | 7 |
| Birangali | 2 | 1 |

| Locality. | Falls. | Accumulations. |
|---------------------|--------|----------------|
| | Ft. | Ft. |
| <i>Inner hills.</i> | | |
| Narang | 15½ | 16 |
| Paludran | 14 | 13 |
| Kagan | 8½ | 8½ |
| Jared | 11½ | 1½ |
| Jacha | 5½ | 2½ |
| Sundigali | 5½ | 2½ |
| Malakandi | ½ | .. |

(b) *Dir, Swat and Chitral. Drosh.*—Light snow fell at Drosh on three days in March, but none fell later. On the surrounding hills snowfall occurred frequently in March and April, down to 8,000 ft. in March and to 9,000 ft. in April. At the end of May accumulations of snow were visible on the Lowarai and Madaglasht peaks and were also reported from some of the passes; they were above normal.

Malakand.—Snow fell on ten days in March and on five days in April, the falls being heavy and above normal in March. The snowline descended to 4,000 ft. and 6,500 ft. respectively during the two months. No snow fell during May. The depths of the accumulations on the peaks are given in the table below, and were above normal:—

| Locality. | March. | April. | May. |
|---------------------|--------|--------|------|
| | Ft. | Ft. | Ft. |
| Lowarai | 16 | 10 | 2½ |
| Bashkar | 21 | 17 | 14 |
| Mankyal | 24 | 17 | 15 |
| Hindu Raj | 14 | 10 | 5 |
| Dwa Sarai | 8 | 5 | 1 |
| Shuklai | 9 | 6 | ½ |

Chitral.—No reports were received in March and April; no snow fell in May. The accumulations of snow on the passes and peaks at the end of May were above normal.

(c) *Kurram.*—No reports were received for March and April. There was no snowfall in May. The accumulations at the end of the month on well-known passes and peaks were reported to be above normal.

(d) *Kohat.*—A report was received only for March; there was no snowfall at the station; on the Samana range snow fell on seven days to a total depth of 1½ ft., but had melted away by the close of the month.

(e) *South Waziristan.*—No reports were received for March and April. There was no snowfall in May. The accumulations on Preghal at the end of the period were slightly above normal.

IV.—KASHMIR.

(a) *Skardu.*—In March light snowfall occurred on four days at the station and on the hills surrounding it, the snowline descending to 7,500 ft. In April and May light snowfall on four days and on three days respectively on the surrounding hills, the snowline descending to 12,000 ft. The depth of snow was 6 inches on the higher peaks and passes in March and April, and 3 inches in May. The accumulations of snow on the higher peaks and passes at the ends of the three months were 12 ft., 10 ft., and 5 ft. respectively. These were above normal.

(b) *Dras.*—Snow fell at the station and on the mountains in the district on thirteen days in each of the months March and April and once during the last week of May; in the last month snowfall was observed on the surrounding hills on five other days. The snowfall was normal. The accumulations at the ends of the months are given below, and were normal:—

| Locality. | March. | April. | May. |
|-------------------------------|--------|--------|------|
| | Ft. | Ft. | Ft. |
| Dras | 5½ | 1½ | 0 |
| High Peaks of hills | 6½ | .. | 4½ |

(c) *Srinagar.*—Several light to moderate falls of snow occurred in the valley and on the surrounding mountains in March. In April and May several light to moderate falls were observed on the surrounding hills. The falls were above normal in March and April and about normal in May, while the accumulations at the end of each month were above normal.

(d) *Gulmarg.*—No reports were received for March, April and the first fortnight of May. In the second fortnight of May several light to moderate falls were observed on the Affarwat range, the snowfall being below normal. The accumulations of snow on the surrounding mountains, especially on the Affarwat range, were reported to be of considerable depth and were above normal.

(e) *Kargil.*—Snow fell on nine days in March and on four days in April. In May, snowfall was observed on high peaks only on four days. The falls were below normal throughout the period. The accumulations on the high peaks were from 8 to 10 ft. at the end of the three months and were above normal.

(f) *Sonamarg.*—Snowfall occurred on ten days in March, and the total amount was slightly above normal. There were no falls in April and May. The accumulations at Zojilla and Nichaney passes were 12 ft. at the end of March, 8 ft. at the end of April and 3 ft. at the end of May. They were about normal for the first two months and below it at the end of May.

(g) *Leh.*—There were frequent snowfalls in the first half of March, the snowline descending to 11,000 ft.; in April there was slight snowfall early in the month, the snowline being about 14,000 ft. There was no snowfall in May. The accumulations were from three to four feet at the ends of

March and April on the well-known passes, but at the end of May the passes were open and the accumulations were disappearing rapidly.

(h) *Muzaffarabad*.—In March there was snowfall on Ganga Dalla and the surrounding hills. The fall was about normal and the higher passes became blocked. There were no falls in April and May except on Ganga Dalla.

V.—THE PUNJAB.

(a) *Chamba*.—At the end of May the accumulations of snow on well-known passes and peaks were estimated to be below normal.

(b) *Kangra*.—In March and April snow is reported to have fallen on the high ranges of the Himalayas in the Kangra and Palanpur tahsils and in the Kulu sub-division to an average depth of 3 ft. and 1 ft. respectively. The snowfall was below normal during both the months. There were no falls in May. The accumulations at the end of each month were as stated below. They were generally below normal.

| Locality. | March. | April. |
|-------------------|--------|--------|
| | Ft. | Ft. |
| Sawai | 10 | 3½ |
| Sangaru | 7 | 3 |
| Awaru | 6 | 4 |
| Hampta | 14 | 6 |
| Rohtang | 11 | 5 |
| Bhabu | 4 | 3 |
| Bishlew | 5 | 2½ |
| Jalori | 4 | 2 |

The accumulations on the higher peaks at the end of May were about 2 ft.

(c) *Kilba*.—There were six light snowfalls in March and three in April, the snowline descending to 8,000 ft. in both the months. In May there were occasional light falls of brief duration over the high peaks. The falls were slightly above normal in each month. In March and April all the

peaks and passes were impassable. At the end of May all passes excluding Charang pass were open.

VI.—UNITED PROVINCES.

(a) *Almora*.—The following table gives the amounts of falls and accumulations for each month. The falls were generally below the average, but the accumulations were above normal.

| Locality. | March. | April. | May. |
|------------------------|--------|--------|------|
| | Ft. | Ft. | Ft. |
| <i>Falls.</i> | | | |
| Malla Johar | 3½ | 2½ | ½ |
| Malla Danpur | 1 | 1½ | 1½ |
| Malla Darma | 16½ | 4½ | .. |
| Chaudans | 3½ | 3 | ½ |
| Byans | 5½ | .. | 3 |
| <i>Accumulations.</i> | | | |
| Bankatia | 25 | 20 | .. |
| Nandakot | 30 | 25 | 20 |
| Nuwe | 25 | 20 | 12 |
| Masurleg | 14 | 15 | 8 |
| Utta Dhura | .. | .. | 8 |
| Lipu | .. | .. | 8 |

(b) *Garhwal*.—In this district it snowed three times in March, the depths ranging from 2 inches to one foot, and once in May, the depth ranging from ½ inch to 4 inches. The snowfall was below normal. The accumulations at the ends of March and May were about and below normal respectively.

VII.—TIBET.

Gyantse.—No snowfall during March 1939.

South-West Monsoon Period, June to September.

JUNE AND JULY.

I.—AFGHANISTAN.

Kabul.—No falls were recorded on any of the mountain ranges of Afghanistan during the period. Due to the heavy accumulations of the previous winter, snow continued to exist in the crevices of the Paghman and Hindu Kush range at the end of the period.

II.—NORTH-WEST FRONTIER PROVINCE.

(a) *Hazara*.—Approximate depths of falls during, and accumulations at the end of the period are given in the following table.

| Peaks. | Falls during the period. | Accumulations at the end of the period. |
|-------------------------|--------------------------|---|
| | Ft. | Ft. |
| Kachh | ½ | 7½ |
| Mahli Burawai | ½ | 6 |
| Khopra | ½ | 6 |
| Kuropass | 0 | 6 |
| Raji Bhogi | ½ | 6 |
| Mahli Battal | ½ | 6½ |
| Sarool | ½ | 6½ |
| Bajitar | ½ | 6½ |
| Shah Kharan | ½ | 6½ |
| Jam Garh | ½ | 4½ |
| Mussala Musa | ½ | 3½ |
| Mulki | Traces. | 2 |
| Mukra | | 2 |

Accumulations at the end of July were above normal.

(b) *Dir, Swat and Chitral. Drosh.*—No snowfall occurred during the period at Drosh. There was only one fall, the snow melting away soon, on Madaglasht peak on 27th July. There were no accumulations on the ranges and passes at the end of the period.

Chitral.—There was a heavy fall on the 28/29th July. Accumulations of snow were above normal.

Malakand.—No snowfall occurred during the period. Accumulations at the ends of June and July are entered in the following table :—

| Locality. | June. | July. |
|------------------------|-------|-------|
| | Ft. | Ft. |
| Lowarai Peak | 1 | .. |
| Bashkar | 9 | 6 |
| Mankyal | 10 | 8 |
| Hindu Raj | 2 | .. |

(c) *Khyber Agency.*—No snow fell during the months of June and July. Depth of accumulations on the high peaks of Morga Hill were estimated to be about 2½ ft. at the end of the period.

(d) *Kurram.*—No snowfall occurred during the period in either the agency or the adjoining hills. Accumulations at the end of the period on well-known passes and peaks were as follows and were above normal.

| | |
|------------------------|---------|
| Sikaram peak | 4" |
| Badina peak | 2½" |
| Zeran Pass } | Traces. |
| Sikaram Pass } | |

III.—KASHMIR.

(a) *Skardu.*—No snowstorms occurred during the period: Depths of accumulations on the higher passes at the end of June and July measured about three feet and one foot respectively. They were above normal.

(b) *Dras.*—There was no snowfall during the period.

(c) *Srinagar.*—Several light to moderate falls of snow were observed on the surrounding mountains in June while none was recorded in July. Falls during the period were below normal. Snow accumulations on the surrounding mountains were above normal in June and below normal in July.

(d) *Gulmarg.*—Several light to moderate falls of snow were observed on the Affarwat range in June while only two were observed in July. Snow accumulations of last winter continued to exist throughout the period and were of considerable depth at the end of the period.

(e) *Kargil.*—There was no snowfall during the period. Accumulations at the end of June measured about 2 ft., there being none at the end of July.

(f) *Sonamarg.*—There were no falls during the period. Snow accumulations on the Zojilla and Nichaney passes were about one foot at the end of June and nil at the end of July.

(g) *Leh.*—No falls were recorded during the period. Snowline descended to a height of 16,000 ft. and slight accumulations existed on the higher ranges at the end of the period.

(h) *Muzaffarabad.*—There was no snowfall during the period.

IV.—THE PUNJAB.

(a) *Chamba.*—During June there occurred only two light falls, the depth of snow for each fall being about one inch. Accumulations were below normal.

(b) *Kangra.*—There was no snowfall in the district except in Nagar where slight snow was experienced above 15,000 ft. Snow accumulations were below normal.

(c) *Kilba Hills.*—There was practically no snowfall. The snowline was at a height of 12,000 ft. in June and at 14,000 ft. in July. All the passes were open to traffic during the period. The falls of the season were below the average.

V.—UNITED PROVINCES.

(a) *Almora.*—The following table gives the aggregate falls and accumulations of snow on the well-known passes and peaks about Almora at the ends of June and July :—

| Locality. | June. | July. |
|------------------------|-------|-------|
| | Ft. | Ft. |
| <i>Falls.</i> | | |
| Malla Danpur | 1 | 1 |
| Chaudans | 1½ | 1 |
| Malla Darma | .. | 4 |
| Byans | 3½ | 3½ |
| <i>Accumulations.</i> | | |
| Nandakhat | 10 | 10 |
| Masurleg | 8 | 7½ |
| Nuwe | 13 | 7 |
| Lampia | 9 | 7½ |
| Lipu | 6 | 5 |

On the whole the accumulations were above normal.

(b) *Garhwal.*—There was no snowfall during the period.

AUGUST AND SEPTEMBER.

I.—AFGHANISTAN.

Kabul.—In the region of the Takht-i-Turkaman at a height of about 13,000 ft. there was an unusually early snowfall in the first week of August.

II.—NORTH-WEST FRONTIER PROVINCE.

(a) *Dir, Swat and Chitral. Drosh.*—Snowfall occurred on Lowarai and Madaglasht peaks on two days both in August

and September but melted away soon. The snowline descended to a height of 12,000 ft. in August.

Malakand.—There was no snowfall during the period. The depths of accumulations on the well-known passes and peaks are given below :—

| Locality. | August. | September. |
|-------------------|---------|------------|
| | Ft. | Ft. |
| Bashkar | 5 | 3 |
| Mankyal | 7 | 5 |

III.—KASHMIR.

(a) *Skardu.*—Snowstorms occurred on two days on the higher peaks in August while none was recorded in September. Depth of snow on higher passes and peaks was estimated to be 1 ft. at the end of September.

(b) *Dras.*—No snowfall was observed during August while three light falls were recorded in September. There were no accumulations on the Zojilla pass during the period.

(c) *Srinagar.*—A few light falls of snow were observed on the surrounding mountains during the last week of September. Snowfall during the period was below the average. Slight accumulations which persisted in the rock-angles and gorges of the surrounding mountains at the end of August had melted away by the end of September.

(d) *Gulmarg.*—No snowfall was observed during August while several light to moderate falls were recorded during September. Accumulations at the end of the period on the Affarwat range were normal.

(e) *Kargil.*—No snowfall was recorded during the period.

(f) *Sonamarg.*—No snowfall was recorded during the period.

(g) *Leh.*—No snowfall was recorded during the period.

(h) *Muzaffarabad.*—No snowfall was recorded during the period.

The Retreating Monsoon Period, October to December.

I.—AFGHANISTAN.

Kabul.—Slight falls of snow occurred on three days in October and on four days in December on the peaks of the Paghman and Hindukush ranges. Passes were open to traffic and there was only 2 to 3 inches of snow on the Shibar pass (10,000 ft.). Falls and accumulations at the end of the period were about normal.

II.—BALUCHISTAN.

Quetta.—Reports for the period ending 15th December indicate that snow fell on 5th and 6th December to a depth of 3 to 4 inches on the high peaks of the hills surrounding Quetta. The falls were below the average.

IV.—THE PUNJAB.

Kilba.—No snow fell during August, while September recorded occasional falls down to a height of 12,000 ft.

V.—UNITED PROVINCES.

(a) *Almora.*—Snowfalls and accumulations are entered in the following table :—

| Locality. | August. | September. |
|-------------------------|---------|------------|
| | Ft. | Ft. |
| <i>Falls.</i> | | |
| Malla Danpur | 1 | 2½ |
| Malla Darma | 5 | 6½ |
| Chaudans | 1½ | 1½ |
| Byans | 1½ | 2 |
| <i>Accumulations.</i> | | |
| Nandakhat | 10 | 30 |
| Sundar Dhunga | 20 | 25 |
| Nuwe | 5 | .. |
| Masurleg | 8 | 8 |
| Lampia | 10 | 10 |
| Lipu | 8 | 9 |

On the whole the accumulations were above normal at the end of the period.

(b) *Garhwal.*—No snowfall was recorded during August, while three were observed in September. The depth of snow ranged from 2 to 3 inches. The snowline descended to a height of 16,000 ft. Accumulations on the higher passes were normal.

III.—NORTH-WEST FRONTIER PROVINCE.

(a) *Hazara.*—During the period snowfall occurred only once, on 27th October, in the Hazara district. The snowline descended down to 5,000 ft. elevation, and at Shogran, (7,500 ft.) the fall measured about 4½".

(b) *Dir, Swat and Chitral.* *Drosh.*—Snowfall occurred on the surrounding hills of Drosh on six days in October and on four days in December, the snowline descending down to a height of 10,000 ft. Falls of the period were below the average. At the end of the period the well-known passes were free, but snow was present on the peaks of Madaglasht, Lowarai and other hills.

Malakand.—Snow fell once in October and once in December on the Lowarai, Mankyal and Bashkar. There was no snowfall in November. Falls and accumulations were below